



Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

State of Utah
DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

288 North 1460 West
P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 538-6121

RECEIVED
MAR 03 1988
DIVISION OF
OIL, GAS & MINING

February 28, 1989

Mr. Rick York, General Manager
Moab Salt, Inc.
P.O. Box 1208
Moab, Utah 84532

RE: Moab Salt May 18, 1988 Response to
DOGM Comments on Mine and
Reclamation Plan, Cane Creek Potash
Mine, M/019/005, Grand County, Utah

Dear Mr. York:

We have reviewed your response referenced above, and present the following comments:

Attachment A Responses

1. Response to Comment No. 1 - No. 3 Canyon Collection System

- a) Moab Salt is responsible to control contaminated storm water emanating from their operation. The plan will need to include control and capture of both contaminated surface and subsurface flows. Total containment of all contaminated stormwater flows will be required. A revised schedule for design and installation should be submitted in the spring of 1989.
- b) Design of the canyon collection system must also include the following monitoring,
 - 1) Water quality measurements made of all surface and subsurface waters captured.
 - 2) Monitoring of subsurface hydraulic gradients, via piezometers or other means, to ensure reversal of flows and capture of contaminated ground water.
- c) Quarterly reporting of monitoring information will also be required.
- d) Moab Salt will be required to obtain a Construction Permit for the dam and all related stormwater-wastewater control structures and appurtenances prior to construction. If the dam has capacity to impound 20 acre-feet or more, Moab Salt will also be required to obtain approval from the State Engineer's Office.

2. Response to Comment No. 2 - Brine Lake and Salt Storage Area Seepage

- a) A plan for the VLF survey should be submitted to the Bureau for prior approval. The plan should outline:
- 1) Type of VLF equipment and location of VLF source(s) to be used.
 - 2) Number, location, directional orientation, and spacing of lines to be used in the survey. This information should also be described relative to major geologic and man-made features at the site.
 - 3) Station spacing on each line.
 - 4) Data display format to be used. Profile data on plan view maps is preferred.

The plan should also address the following technical issues:

- 1) Depth of VLF penetration versus anticipated depth to ground water.
 - 2) Effect of and compensation for conductive overburden and near surface conductors such as pipes and water bodies.
 - 3) Compensation for VLF topographic effects.
 - 4) VLF discrimination of ground waters of contrasting electrical conductance.
- b) Monitoring wells installed to assess the ground water impact of the salt storage area or brine lake must be located both up and downgradient of the potential contaminant sources.
- c) Ground water quality both up and downgradient of the sources must also be determined and evaluated.
- d) Any recovery well construction will also include piezometer monitoring to confirm capture of contaminants and reversal of hydraulic gradient to the Colorado River.
- e) Any contaminated ground water recovery plan will include plans for operation and maintenance of the system.
- f) Any contaminant recovery plan will include periodic monitoring and quarterly reporting to demonstrate adequate system operation.

3. Response to Comment No. 3 - Water Balance

- a) We understand that water balance information will be submitted yearly for each major component of the site. We request that available water balance information for each component be submitted by April 1, 1989. This includes: the evaporation ponds, salt storage area, and brine lake.

*This is not needed NO site
de degradation results from VLF Em. We would not
need to approve this either as EXO, LMO, SMO...*

- b) Sampling of the Colorado River should be performed. One of the sample locations should be as near the mouth of the number 3 canyon as practical. We request a map of the proposed sample locations.
 - c) Composite sampling of the Colorado River on verticals transects at equal width increments is not usually done but it is not considered impossible.
4. Response to Comment No. 4 - Brine Lake Seepage/Catch Pond
- a) What evidence exists to support the claim that the water collected by the upper catch pond emanates from joints on the north abutment? The July 19, 1962 memo describes the leak "...at the toe of the dam on the eastside, near the north end ...".
 - b) Grouting information provided describes remedial work to the north abutment after construction. Does this mean that no grouting was undertaken during the construction in the reservoir area or on the dam's foundation and abutments?
 - c) Plans for any VLF survey undertaken, should be submitted for prior approval [see 2(a) above].
 - d) A map of the location of grout holes, referenced in the July 19, 1962 memo by James H. Ogg, has not been included with the submittal. No conclusions can be reached on the grouting without the map.
 - e) If the catch pond was "field" designed during construction, then Moab Salt should submit "As-Built" plans for Bureau review as a part of any application for approval of the Brine Lake or Dam (see Other Concerns, point 4, below).
 - f) Moab Salt should allow the BWPC to inspect any excavations that may be made.
 - g) The purpose of the information to be submitted is to identify the extent of the seepage and its flow system and evaluate the design of the catch pond in recovering all the seepage.
5. Response to Comment No. 6 - No. 3 Canyon Collection System, Stormwater Control
- a) Any modification to the No. 3 Canyon Collection System or any other contaminated stormwater control system will require prior issuance of a Construction Permit from the Bureau.
 - b) Any discharge of contaminated stormwater from the No. 3 Canyon Collection System to the Colorado River will require prior issuance of a Utah Pollutant Discharge Elimination System (UPDES) permit.
 - c) Moab Salt should establish baseline or background levels now for runoff quality from undisturbed and unaffected drainages. This information will determine a threshold or water quality level to distinguish contaminated from uncontaminated runoff. It also will be a factor in the design of runoff control structures in the No. 1 and 3 Canyon Collection Systems, as well as plant-site runoff.

- d) Both during current operation and future reclamation, the capture and discharge of uncontaminated runoff does not require the issuance of a permit.
6. Response to Comment No. 8 - Reporting
- a) We anticipate that all Department of Health mine plan approvals, Construction or UPDES permits issued for the control of contaminated stormwater, or for the recovery of contaminated ground water will require periodic monitoring of system operation and quarterly reporting.

Attachment B Responses

1. Response to Comment No. 3 - Runoff Control
- a) Plant Site Salt Losses. We recommend that Moab Salt evaluate the causes and sources of salt losses to the environment at the plant site, and create Best Management Practices to prevent and minimize such losses.
 - b) Plant Site Runoff. Water quality sampling and analysis should be conducted to monitor the quality of plant-site runoff. Only uncontaminated stormwater may be discharged to the river without a UPDES permit.
2. Response to Comment No. 5 - Salt Storage Area Seepage
- a) The depth of the pump in TP-3 may not be the same as the depth to ground water. Other water level evidence should be collected to verify the elevation of the water table near TP-3. Any piezometer(s) used for this purpose should comply with BWPC Quality Assurance guidelines.
 - b) At what location were the river elevations determined?
 - c) No compensation has been made for differences in specific gravity between the Colorado River water and the ground water near TP-3. Without conversion of the brine head measured near TP-3 to equivalent fresh water head, it is impossible to determine an accurate hydraulic gradient or to evaluate the effectiveness of TP-3 in capturing any seepage losses to ground water caused by Moab Salt.
 - d) Do any water quality analysis data exist for ground water from TP-3 to allow calculation of specific gravity and evaluation of ground water chemistry?

Other Concerns

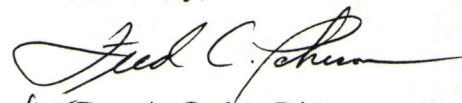
1. Evaporation Pond Seepage. Evaluation of seepage losses from the evaporation ponds has not been addressed in your May 18, 1988 letter to DOGM. In our opinion, these losses must also be evaluated and appropriate steps taken to prevent or recover them. This effort will also provide direct benefit to Moab Salt in that it will minimize the amount of water to be handled by the No. 1 and No. 3 Canyon Collection Systems, and it will return product to your process circuit. We anticipate that Moab Salt will prepare a plan to evaluate these seepage losses from the evaporation ponds.

2. Canyon Collection Systems. Any evaluation of seepage collection from the evaporation ponds should focus on both the No. 1 and No. 3 Canyon Collection Systems. If it is shown that these two systems cannot capture the total amount of brine lost from the evaporation ponds, then attention should be focused on locating and recovering the outstanding brine losses.
3. Salt Storage Area. We have reviewed our files and have not found any record of any Bureau of Utah Water Pollution Control Committee approval of the salt storage area. We request that you provide us with a copy of any such approval if it is available. If approval from the Bureau or Committee has never been issued, it is our expectation that the objectives of the investigations and possible subsequent design and construction of facilities for the salt storage area, would be to secure the necessary approvals. Existing facilities would require an Approval letter from the Committee; future facilities to be built would require a Construction Permit and Approval.
4. Tailings Brine Lake, Dam, and Catch Pond. We have also reviewed our files and have also been unsuccessful at locating any Bureau or Committee approvals for these structures. Please remit copies thereof if they exist. As explained above, if these structures have not received any Bureau or Committee approvals we would expect that you secure these as soon as possible. Your upcoming investigations should facilitate your application for such approvals. Any planned construction related to these facilities may require prior issuance of a Construction Permit.
5. Sanitary Wastewater Treatment System. We have located plans for these facilities submitted by Texas Gulf Sulphur during the period of 1961-1963. Unfortunately, we have not located any approvals for the system. We would recommend that our District Engineer undertake a review of the existing facility to determine compliance with current regulations. Mr. Dave Arriotti of the Southeast District Health Department shall contact you directly.

If you have any questions or concerns regarding the above comments please contact Loren Morton or Steve McNeal at 538-6146.

We appreciate your cooperation in bringing your facility into compliance with State water pollution requirements.

Sincerely,



for Don A. Ostler, Director
Bureau of Water Pollution Control

LBM:kc

cc: Ken Alkema, DEH
Lowell Braxton, DOGM
Dave Arriotti, SE Dist. Health Dept.

0763c22